

# Two new species of the Indo-Pacific fish genus *Pseudoplesiops* (Perciformes, Pseudochromidae, Pseudoplesiopinae)

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**SYNOPSIS.** *Pseudoplesiops immaculatus* is described from 72 specimens from throughout the West Pacific and the eastern and central Indian Ocean. It is distinguished from congeners in having, in combination, a prominent intermandibular flap and an unspotted operculum. *Pseudoplesiops occidentalis* is described from five specimens from the Maldives, central Indian Ocean. It is distinguished from congeners in having, in combination, 11, 23 dorsal-fin rays, 26–28 scales in lateral series, and scales with distinct centres and radii in all fields.

## INTRODUCTION

The genus *Pseudoplesiops* Bleeker was recently diagnosed to include pseudoplesiopine pseudochromids with the medial laminae of the pelvic bones expanded dorsally (Gill & Edwards, 1999). Aside from this synapomorphy, members of the genus are distinguished from other pseudoplesiopines in possessing the following combination of external characters: scales in lateral series 26–42; lower lip complete (uninterrupted at symphysis); and preopercular pores usually 7 (rarely 6 or 8), with a pore present at the upper terminus of the preopercle. The genus is mostly confined to the eastern Indian and Pacific Oceans, but two undescribed species occur in the Maldives, central Indian Ocean. Although it is our intention to produce a revision of the genus, we herein describe the two Maldives species in order to make their names available for a forthcoming guide to western and central Indian Ocean fishes.

## MATERIALS AND METHODS

Institutional abbreviations follow Leviton *et al.* (1985). All measurements to the snout tip were made to the midanterior tip of the upper lip. Length of specimens are given in mm standard length (SL), which was measured from the snout tip to the middle of the caudal peduncle at the vertical through the posterior edge of the dorsal hypural plate. Head length was measured from the snout tip to the posteriormost edge of the opercular membrane. Snout length was measured over the shortest distance from the snout tip to the orbital rim, without constricting the fleshy rim of the latter. Orbit diameter was measured as its fleshy horizontal length. Interorbital width was measured as the least fleshy width. Upper jaw length was measured from the snout tip to the posterior edge of the maxilla. Predorsal, preanal and prepelvic lengths were measured from the snout tip to the base of the first spine of the relevant fin. Body width was measured between the posttemporal pores. Caudal peduncle length was measured from the base of the last anal-fin ray to the ventral edge of the caudal fin at the vertical through the posterior

edge of the ventral hypural plate. Caudal peduncle depth was measured obliquely between the bases of the last dorsal- and last anal-fin rays. Measurements of fin rays excluded any filamentous membranes. Pectoral fin length was measured as the length of the longest middle ray. Caudal fin length was measured as the length of the lowermost ray on the dorsal hypural plate.

Counts of dorsal-, anal- and pelvic-fin spines (unsegmented rays) and segmented rays are presented, respectively, as Roman and Arabic numerals. If the last dorsal- or anal-fin ray was divided at its base it was counted as a single ray. Counts of branched, segmented rays in the dorsal and anal fins included unbranched rays behind the first branched ray. A value was not recorded if, due to tip damage, a branched or unbranched condition could not be determined for the segmented ray preceding the anteriormost branched ray. As in most actinopterygian fishes, the upper ray in the pectoral fin is rudimentary and rotated so that its asymmetrical medial and lateral hemitrichs appear to represent two separate rays; these were counted as a single ray. Procurrent caudal-fin ray counts were of the rays above ('upper') and below ('lower') the principal caudal-fin rays. The uppermost principal caudal-fin ray was defined as the ray articulating with hypural 5, and the lowermost principal caudal-fin ray was the ray articulating with the cartilage nubbin between the distal tips of the parhypural and the haemal spine of preural centrum 2. All pseudoplesiopine species normally have 17 (9 + 8) principal caudal-fin rays.

Counts of 'scales in lateral series' were of the posteroventrally oriented transverse scale rows on the midside, beginning with the row through the tubed scale at the branchial opening and ending with the row through the scale at the midposterior edge of the hypural plate. 'Scales in transverse series' were counted anterodorsally from the anal-fin origin to the dorsal-fin base. Circumpeduncular scales were counted in a zig-zag fashion around the middle of the caudal peduncle. Gill-raker counts were of the outer rakers on the first arch, including rudiments; the angle raker is included in the lower-limb (second) count. Counts of pseudobranch filaments included all rudiments. Nomenclature of head pores follows Winterbottom (1986), as modified by Gill *et al.* (2000).

Counts of vertebrae are presented in the form precaudal + caudal

= total. Caudal vertebrae are defined as those with a haemal spine, and include the terminal urostylar complex (which was counted as a single vertebra). The pattern of insertion of supraneural (predorsal) bones and anterior dorsal-fin pterygiophores within interneural spaces is given as an 'anterior dorsal-fin pterygiophore formula' modified from the 'predorsal formula' of Ahlstrom *et al.* (1976). Each supraneural is represented by an 'S,' neural spines are represented by slashes, and pterygiophores are represented by '3' (indicating a pterygiophore that bears two supernumerary rays and a serially associated ray), '2' (indicating a pterygiophore that bears a supernumerary ray and a serially associated ray) or '1' (indicating a pterygiophore that bears only a serially associated ray). An 'anterior anal-fin pterygiophore formula' is also presented, and is similar to the anterior dorsal-fin pterygiophore formula, except that the slashes represent haemal spines. Osteological features were determined from x-radiographs and from cleared-and-stained specimens, which were prepared following the methods of Taylor & Van Dyke (1985).

Counts and measurements are given as values or value ranges for all type specimens, followed, where different, by values for the holotype in parentheses. Where counts were recorded bilaterally, both counts are presented for the holotype, separated by a slash; the first count given is the left count.

*Pseudoplesiops immaculatus* sp. nov.

Bearded Dottyback

Figures 1, 2

*Pseudoplesiops typus* [non Bleeker, 1858]; Bleeker, 1875: 31 (in part, specimen from Amboina).

*Chilidichthys* [sic] sp. 1; Allen & Steene, 1979: 26 (Christmas Island and Cocos Keeling Atoll, Indian Ocean).

*Pseudoplesiops revillei* [non Schultz, 1953]; Kailola, 1987: 244 (Papua New Guinea); Allen & Steene, 1988: 180, fig. 145 (Christmas Island, Indian Ocean); Paxton *et al.*, 1989: 521 (list; Great Barrier Reef).

*Pseudoplesiops* sp.; Gill in Randall *et al.*, 1990: 131 (description; distribution; col. fig.); Randall & Anderson, 1993: 15 (Maldiv

Islands); Gill in Randall *et al.*, 1997: 131 (description; distribution; col. fig.); Kulbicki & Williams, 1997: 14 (Ouvéa Atoll, New Caledonia).

*Pseudoplesiops* n. sp.; Allen & Smith-Vaniz, 1994: 10 (Cocos (Keeling) Islands).

*Pseudoplesiops* sp. 1.; Gill & Edwards, 1999: 144 (list of osteological materials); Gill, 2000: 2560 (key).

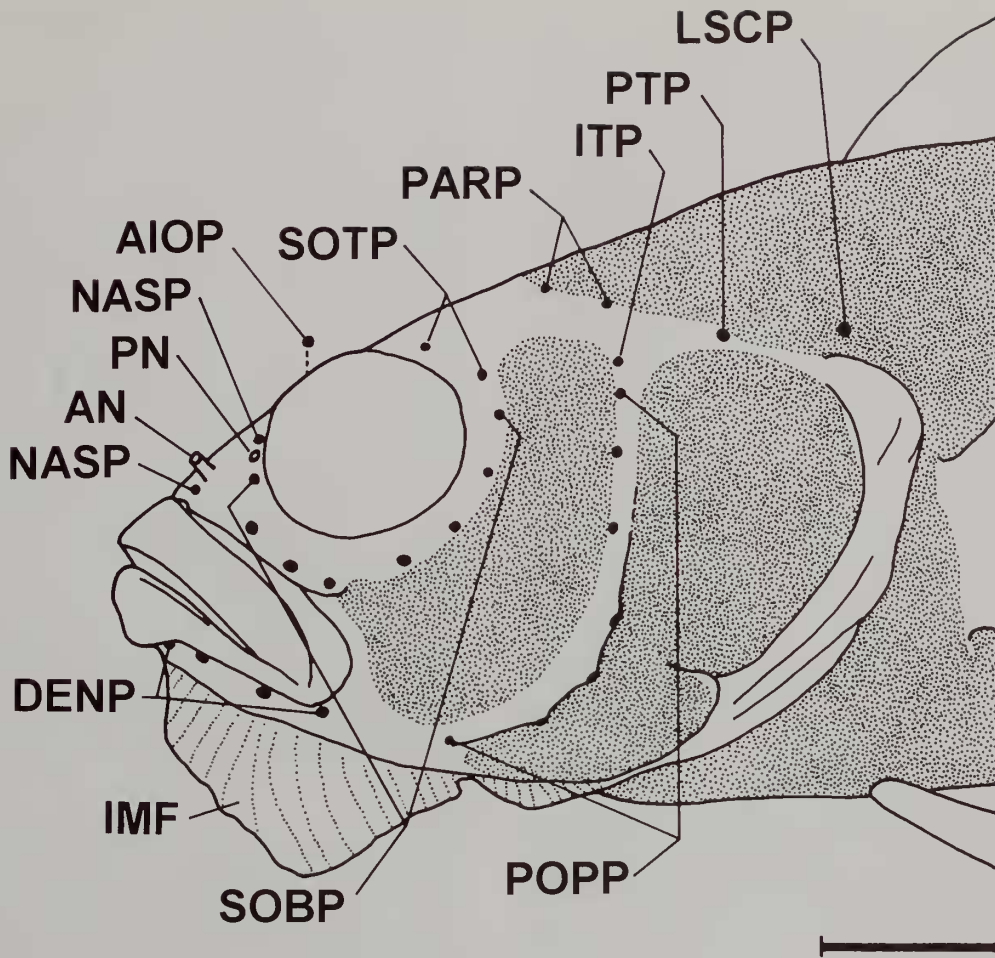
**HOLOTYPE.** AMS I.20757-069, 29.8 mm SL, Great Barrier Reef, W end of Raine Island (11°36'S 144°01'E), coral gutter, 2–20 m, AMS and Australian Institute of Marine Science team, 13 February 1979.

**PARATYPES.** AMS I.17090-043, 1: 26.5 mm SL, Papua New Guinea, Madang Harbour, S edge of Massas Island, coral reef, 1.5–14 m, B.B. Collette *et al.*, 31 May 1970; AMS I.17094-013, 1: 28.5 mm SL, Papua New Guinea, Trobriand Islands, N end of Kiriwinna Island, 0–5 m, B.B. Collette and B. Goldman, 7 June 1970; AMS I.17094-014, 1: 30.4 mm SL, collected with AMS I.17094-013; AMS I.17096-008, 1: 27.8 mm SL, Papua New Guinea, Trobriand Islands, Kiriwinna Island, off N coast of Tawai Point, coral with sand patches, 7.5 m, B.B. Collette, 8 June 1970; AMS I.20756-014, 1: 25.7 mm SL (subsequently cleared and stained), Great Barrier Reef, Great Detached Reef, over coral and sand, 2–8 m, AMS and Australian Institute of Marine Science team, 11 February 1979; AMS I.20756-124, 2: 15–30 mm SL, collected with AMS I.20756-014; AMS I.20757-039, 1: 29.4 mm SL, collected with holotype; AMS I.20757-091, 3: 27.6–30.5 mm SL, collected with holotype; AMS I.20784-040, 2: 17.0–21.9 mm SL, Great Barrier Reef, Yonge Reef, 1 mile N of platform, back reef knoll, 1–15 m, D.F. Hoese *et al.*, 1 December 1978; AMS I.21972-004, 1: 31.2 mm SL, Solomon Islands, Guadalcanal, 12 km W of Honiara, over wreck, J.E. Randall, 12 July 1975; AMS I.22616-044, 1: 20.9 mm SL, Great Barrier Reef, Escape Reef, coral reef, 5–18 m, J.R. Paxton *et al.*, 2 November 1981; AMS I.22619-025, 1: 26.0 mm SL, Great Barrier Reef, Escape Reef North (15°49'S 145°50'E), sand slope, coral and sand in cave under bommie, 19–22 m, J. Paxton *et al.*, 3 November 1981; ANSP 131727, 2: 27.2–27.5 mm SL, Cocos Keeling Islands, West Island, off N end outside breakers (12°07'50"S 96°48'55"E),



Fig. 1 *Pseudoplesiops immaculatus*, AMS I.20757-069, 29.8 mm SL, holotype, Raine Island, Great Barrier Reef. (Photo by P. Crabb.)





**Fig. 2** Cephalic laterosensory pores of *Pseudoplesiops immaculatus*. AMS I.20757-069, 29.8 mm SL, holotype, Raine Island, Great Barrier Reef. AIOP, anterior interorbital pore; AN, anterior nostril; DENP, dentary pores; IMF, intermandibular flap; ITP, intertemporal pore; LSCP, pore in tubed lateral-line scale (other details of scale omitted); NASP, nasal pores; PARP, parietal pores; PN, posterior nostril; POPP, preopercular pores; PTP, posttemporal pore; SOBP, suborbital pores; SOTP, supraotic pores. Scaled areas shown in stipple. Scale bar = 2 mm.

0.5–1.3 m relief with sand channels, soft and stony corals, W.F. Smith-Vaniz *et al.*, 24 February 1974; ANSP 131728, 1: 30.6 mm SL, Cocos Keeling Islands, West Island, ca. 1 km NNW of N end of island (12°07'20"S 96°49'05"E), rocky patch fronting on sand, W.F. Smith-Vaniz *et al.*, 1 March 1974; ANSP 178041, 1: 30.8 mm SL, Papua New Guinea, Bougainville Island, Tautsina Island, E of Kieta Peninsula, coral reef off stack at N end of island, 0.9–7.5 m, 11 March 1965 (Te Vega Expedition Cruise no. 6, Station 247); ASIZT 57016, 1: 25.8 mm SL, Taiwan, J.P. Chen, 22 April 1994; ASIZT 56991, 1: 19.7 mm SL, Taiwan, 9 m, J.P. Chen, 21 April 1994; BMNH 1974.5.25.973, 1: 22.8 mm SL, Papua New Guinea, Trobriand Islands, Kiriwinna Island, E shore NW of Gusaweta, exposed coral platform, 0–3.6 m, B.B. Collette, 17 June 1970; CAS 58686, 2: 26.3–27.9 mm SL, Maldives Islands, Malé Atoll, reef off SE side of Funidu Islet, inside atoll lagoon (04°11'00"N 073°30'30"E), M.G. Bradbury, 6 November 1964; MNHN 1994-45, 1: 22.6 mm SL, New Caledonia, Loyalty Islands, Ouvéa Atoll, Bagaat Islet (20°37'18"S 166°16'08"E), vertical reef wall with small cave and base of wall with coral rubble platform, 15–21 m, J.T. Williams, J.-L. Menou and P. Tirard, 16 November 1991; QM I.15527, 2: 26.8–33.8 mm SL, collected with holotype; RMNH 31188, 1: 28.7 mm SL, Ambon (Amboina); RUSI 35701, 1: 30.9

mm SL, Taiwan, off Houpihu, P.C. Heemstra, 20 January 1988; USNM 209591, 3: 25.3–27.0 mm SL, Indonesia, point E of Tandjung Naira, Haruka Island, surge channel, 4.5 m, V.G. Springer and M.F. Gomom, 15 January 1973; USNM 209965, 1: 23.7 mm SL, Indonesia, Saparua, two stations mixed (isolated coral head surrounded by crinkly calcareous matrix at 9 m and coral patch in 3.6 m), V.G. Springer and M.F. Gomom, 18 January 1973; USNM 290118, 6: 17.4–28.9 mm SL, Papua New Guinea, Hermit Islands, Amot Island, ocean side of reef at drop off (01°33'S 144°59'E), 0–15.2 m, V.G. Springer *et al.*, 30 October 1978; USNM 290327, 5: 27.7–29.5 mm SL, Papua New Guinea, S tip of Massas Island (05°10'18"S 145°51'24"E), 0–24 m, V.G. Springer *et al.*, 6 November 1978; USNM 290437, 1: 31.1 mm SL, Papua New Guinea, Ninigo Islands, just SE of Ami Island (01°14'S 144°22'E), patch reef behind reef, 0–4.5 m, V.G. Springer *et al.*, 22 October 1978; USNM 290749, 3: 23.3–29.9 mm SL, Indonesia, Banda Islands, just W of N tip of Great Banda Island (04°30'30"S 129°56'10"), 0–18 m, V.G. Springer and M.F. Gomom, 9 March 1974; USNM 290791, 1: 30.3 mm SL, Indonesia, Ambon, Latuhalat, Namalatu, about 150 m offshore (03°47'S 128°06'E), 10.5–18 m, V.G. Springer *et al.*, 14 March 1974; USNM 290808, 1: 22.0 mm SL, collected with USNM 290749; USNM 291609, 1: 25.7 mm SL, Philippine Islands, Batanes,

Batan Island, past Mahate, White Beach (20°24'45"N 121°55'00"E), coral and encrusted boulders, 9–12 m, G.D. Johnson and W.F. Smith-Vaniz, 1 May 1987; USNM 292031, 1: 27.8 mm SL, Papua New Guinea, Hermit Islands, N side of W entrance (01°30'30"S 144°59'15"E), 0–12 m, V.G. Springer *et al.*, 4 November 1978; USNM 322986, 1: 31.8 mm SL, New Caledonia, Loyalty Islands, Ouvéa Atoll, Motu Veiloe Islet (20°26'06"S 166°28'30"E), reef crest, small patch reef of mostly dead coral surrounded by rubble, 0.6–3.3 m, J.T. Williams and M. Kulbicki, 17 November 1991; USNM 322994, 1: 32.1 mm SL, New Caledonia, Loyalty Islands, Ouvéa Atoll, Récif Draule (20°34'12"S 166°14'12"E), large depression on submerged reef crest, coral and rubble, 5 m, J.T. Williams, P. Tirard and J.L. Menou, 16 November 1991; USNM 328198, 1: 24.5 mm SL, collected with MNHN 1994-45; USNM 356587, 1: 20.9 mm SL, Vanuatu, Shepherd Islands, Judy Reef off NW tip of Tongoa Island (16°52'30"S 168°31'30"E), coral reef with extensive coral development, J.T. Williams *et al.*, 9 June 1996; USNM 357981, 1: 26.8 mm SL, Solomon Islands, Santa Cruz Islands, Reef Islands, Fenualoa Island, just W of Nota Point (ca. 10°16'30"S 166°16'30"E), coral reef face and outer slope, rich coral growth with sand and rubble, 0–13 m, J.T. Williams *et al.*, 18 September 1998; USNM 358382, 1: 20.4 mm SL, Solomon Islands, Santa Cruz Islands, Reef Islands, Lomlom Island, Nialo Point on E side of Forrest Passage (10°16'S 166°18'30"E), vertical reef wall and rocky surge channels at surface, 0–35 m, J.T. Williams *et al.*, 18 September 1998; WAM P.26083-041, 1: 31.2 mm SL, Indian Ocean, Christmas Island, Ethel Beach, 3–6 m, G.R. Allen and R.C. Steene, 19 May 1978; WAM P.26085-030, 1: 25.9 mm SL, Indian Ocean, Christmas Island, Ethel Beach, 15–20 m, G.R. Allen and R.C. Steene, 20 May 1978; WAM P.26093-015, 1: 27.3 mm SL, Indian Ocean, Christmas Island, 1 km W of Margaret Beach, 10 m, G.R. Allen and R.C. Steene, 25 May 1978; WAM P.26104-005, 1: 27.3 mm SL, Indian Ocean, Christmas Island, Flying Fish Cove (10°29'S 105°40'E), 6–8 m, G.R. Allen and R.C. Steene, 1 June 1978; WAM P.26107-004, 1: 24.0 mm SL, Indian Ocean, Christmas Island, Rhonda Beach (10°29'S 105°40'E), 6–7 m, G.R. Allen and R.C. Steene, 2 June 1978; WAM P.26113-003, 2: 25.6–28.4 mm SL, Indian Ocean, Christmas Island, Winifred Beach (10°29'S 105°40'E), 12–14 m, G.R. Allen and R.C. Steene, 6 June 1978; WAM P.27825-034, 3: 17.6–25.4 mm SL, Papua New Guinea, Manus Island, Los Negros Island, SE point at aerodrome, 10–40 m, G.R. Allen and R. Knight, 5 October 1982; WAM P.29626-001, 1: 31.2 mm SL, Papua New Guinea, Port Moresby (09°30'S 147°10'E), 5–6 m, P. Colin, 24 February 1987; WAM P.29927-004, 1: 23.9 mm SL, Indian Ocean, Cocos-Keeling Islands, Direction Island (12°05'S 096°53'E), 0.1–2.0 m, G.R. Allen, 24 February 1989.

#### DIAGNOSIS

A species of *Pseudoplesiops* with the following combination of characters: prominent intermandibular flap present; and operculum immaculate, without large dark spot.

**DESCRIPTION.** (Based on 72 specimens, 15.0–33.8 mm SL) Dorsal-fin rays I, 26–28 (I, 27), last 3–11 (8) segmented rays branched; anal-fin rays I–II, 16–18 (I, 17), last 3–9 (5) segmented rays branched; pectoral-fin rays 15–18 (16/15), upper 1–5 (2/2) and lower 1–3 (1/1) rays simple; pelvic-fin rays I, 3–4 (I, 4), all segmented rays simple; principal caudal-fin rays 9–10 + 8 (9 + 8), the uppermost 1–2 (1) and lowermost 1–2 (1) rays unbranched; upper procurent caudal-fin rays 3–5 (4); lower procurent caudal-fin rays 2–4 (3); total caudal-fin rays 23–25 (24); scales in lateral series 32–39 (36/35); predorsal scales 7–12 (10); transverse scales 14–17 (16/16); scales behind eye 1–2 (2); scales to preopercular angle 3–4 (3); circumpeduncular scales 16–17 (16); ctenoid scales beginning at 10–16 (14/14) trans-

verse scale rows behind branchial opening; gill rakers 1–4 + 6–10 = 7–12 (2 + 8); pseudobranch filaments 5–8 (6).

Head pores (all bilaterally paired; Fig. 2): nasal pores 2–3 (2/2); anterior interorbital pores 1; posterior interorbital pores 0; supraotic pores 2; suborbital pores 7–9 (8/8); posterior otic pores 0; preopercular pores 7–8 (7/7); dentary pores 4; intertemporal pores 1; anterior temporal pores 0; posttemporal pores 1; parietal pores 2.

As percentage of standard length (based on 34 specimens, 22.8–33.8 mm SL): body depth at dorsal-fin origin 22.8–26.3 (23.8); greatest body depth 23.1–28.1 (26.5); body width 11.5–13.3 (12.4); head length 28.8–32.6 (29.9); snout length 5.3–6.2 (6.0); orbit diameter 7.7–9.9 (8.1); interorbital width 2.2–3.6 (3.0); upper jaw length 10.0–11.2 (10.1); depth of caudal peduncle 13.2–15.3 (14.8); caudal peduncle length 7.3–9.4 (8.1); predorsal length 29.5–32.6 (29.5); preanal length 54.7–57.6 (56.7); prepelvic length 26.4–29.2 (28.2); length of first segmented dorsal-fin ray 8.7–10.8 (9.7); length of third from last segmented dorsal-fin ray 16.4–20.8 (17.4); dorsal-fin base length 60.5–67.8 (63.1); length of first segmented anal-fin ray 9.3–12.3 (11.1); length of third from last anal-fin ray 13.6–20.4 (17.8); anal-fin base length 33.3–37.7 (35.6); caudal fin length 20.4–26.9 (24.8); pectoral fin length 18.4–21.8 (18.5); pelvic fin length 25.7–32.0 (27.8).

Lower lip complete; prominent intermandibular flap present (Fig. 2); fin spines weak and flexible; anterior dorsal-fin pterygiophore formula S/S/S + 2/1 + 1, S/S/S<sup>v</sup> + 2/1 + 1 or S/S/2/1 + 1 (S/S/S<sup>v</sup> + 2/1 + 1); 20–22 (21) consecutive dorsal-fin pterygiophores inserting in 1:1 relationship directly behind neural spine 4; anterior anal-fin pterygiophore formula 2 + 1/1, 3 + 1/1 or 2 + 1 + 1/1 (2 + 1/1); 11–12 (11) consecutive anal-fin pterygiophores inserting in 1:1 relationship directly behind haemal spine 2; second segmented pelvic-fin ray longest; caudal fin rounded to truncate or slightly emarginate; scales without distinct centres, and with radii confined to anterior field; dorsal and anal fins without distinct scale sheaths, although sometimes with intermittent scales overlapping fin bases; anterior lateral line represented by single tubed scale at branchial opening, followed by intermittent series of centrally pitted scales, which terminate at vertical through base of segmented dorsal-fin ray 21–27, or extend slightly past end of dorsal fin (extending slightly beyond end of dorsal fin to vertical through base of segmented dorsal-fin ray 26 in holotype); second intermittent series of centrally pitted scales originating on midside above anterior part of anal fin, extending on to middle of caudal-fin base; additional centrally pitted scales present on caudal-fin base, pits usually aligned vertically on posterior part of scale sheath; scales present on cheeks (not extending posteriorly over upper part of preopercle) and operculum (Fig. 2); predorsal scales extending anteriorly to supratemporal commissure (Fig. 2); vertebrae 12 + 20–22 (12 + 21); epurals 2; epineurals present on vertebrae 1 through 17–21 (1 through 19); ribs present on vertebrae 3 through 11–12 (3 through 12), rib on ultimate precaudal vertebra very small to moderately small or absent.

Upper jaw with 2–6 pairs of curved, enlarged caniniform teeth anteriorly, the medial pair smallest, and 3–4 (at symphysis) to 1–2 (on sides of jaw) irregular inner rows of small conical teeth, the teeth of outer row of conical teeth largest; lower jaw with 2–4 pairs of curved, enlarged caniniform teeth, the medial pair smallest, and 2–4 (at symphysis) to 1 (on sides of jaw) irregular inner rows of small conical teeth, the conical teeth gradually increasing in size and becoming more curved on middle part of jaw, then becoming abruptly smaller on posterior part of jaw; vomer with 1 row of small, stout conical teeth arranged in a chevron; palatines edentate or with small irregular patch of small conical teeth; tongue acutely pointed, edentate.



**LIVE COLORATION.** (Based on colour photographs of the holotype from the Great Barrier Reef, and of paratypes and other specimens from the Great Barrier Reef, Loyalty Islands, Solomon Islands, Vanuatu, Christmas Island and Taiwan)

Head and body pinkish or yellowish brown to olive or bright green, sometimes becoming pinkish to orangish brown on snout, lips and intermandibular flap; iris pale yellow to green or brown, sometimes with reddish grey to pink area around pupil; dorsal and anal fins yellowish, pinkish or orangish brown to olive or bright green, becoming paler distally, with bluish grey to bright blue distal margin, sometimes with broad pale orange to yellow stripe submarginally; bluish grey to pale blue spot or streak at base of alternate dorsal- and anal-fin rays; caudal fin yellowish or pinkish brown to olive or bright green; pectoral fins pinkish, greenish or yellowish hyaline; pelvic fins pale pink or olive to bright green, usually bluish grey to pale blue anteriorly and distally.

#### PRESERVED COLORATION

Head and body pale brown, slightly darker on dorsal part of head and body, and on lips and intermandibular flap; fins pale brown to brownish hyaline; bluish grey to blue spots and distal margins of dorsal and anal fins described above become greyish brown.

#### HABITAT AND DISTRIBUTION

This species is distributed from the Maldiv Islands, east and south to Vanuatu, and north to Taiwan. It has been collected from a variety of reef habitats, from shallow patch reefs to reef walls at depths ranging to at least 20 m (with some collections perhaps from as deep as 40 m).

#### COMPARISONS WITH OTHER SPECIES

*Pseudoplesiops immaculatus* has been confused with *P. revellei* Schultz, a Pacific Plate endemic (*sensu* Springer, 1982). The two species closely resemble each other in morphometric and meristic values, and both possess a prominent intermandibular flap (Fig. 2), although this may be weakly developed or absent in small specimens (smaller than about 18 mm SL). A low intermandibular ridge or weak flap may be present in certain other pseudochromid species (e.g., *Chlidichthys cacatuoides*, see Gill & Randall, 1994; *Pseudoplesiops occidentalis*, Fig. 4), but only in *P. immaculatus* and

*P. revellei* is it well-developed. On the basis of this synapomorphy, we suggest that the two species are sister taxa. They are distinguished from each other by a single coloration character: *P. revellei* has a large, dark brown to black spot on the operculum, which is absent in *P. immaculatus*.

#### REMARKS

Colour photographs of the species have been published by Allen & Steene (1988; as *P. revellei*), and Randall *et al.*, (1990, 1997 - as *P. sp.*).

#### ETYMOLOGY

The specific epithet is from the Latin, meaning without a spot, and alludes to the sole character distinguishing *P. immaculatus* from its sister species.

#### *Pseudoplesiops occidentalis* sp. nov.

Maldives Dottyback

Figures 3, 4

*Clinus* sp.; Regan, 1902: 276 (description; Haddumati, Maldiv Islands).

*Pseudoplesiops* sp.; Randall & Anderson, 1993: 15, pl. 3e (Maldiv Islands; col. fig.).

*Pseudoplesiops* sp. 1; Kuitert, 1998: 77 (habitat notes; colour photo).

**HOLOTYPE.** BPBM 32926, 24.9 mm SL, Maldiv Islands, South Malé Atoll, Maaniyafushi Island, reef, 25–30 m, J.E. Randall, C. Anderson and M.S. Adam, 17 March 1988.

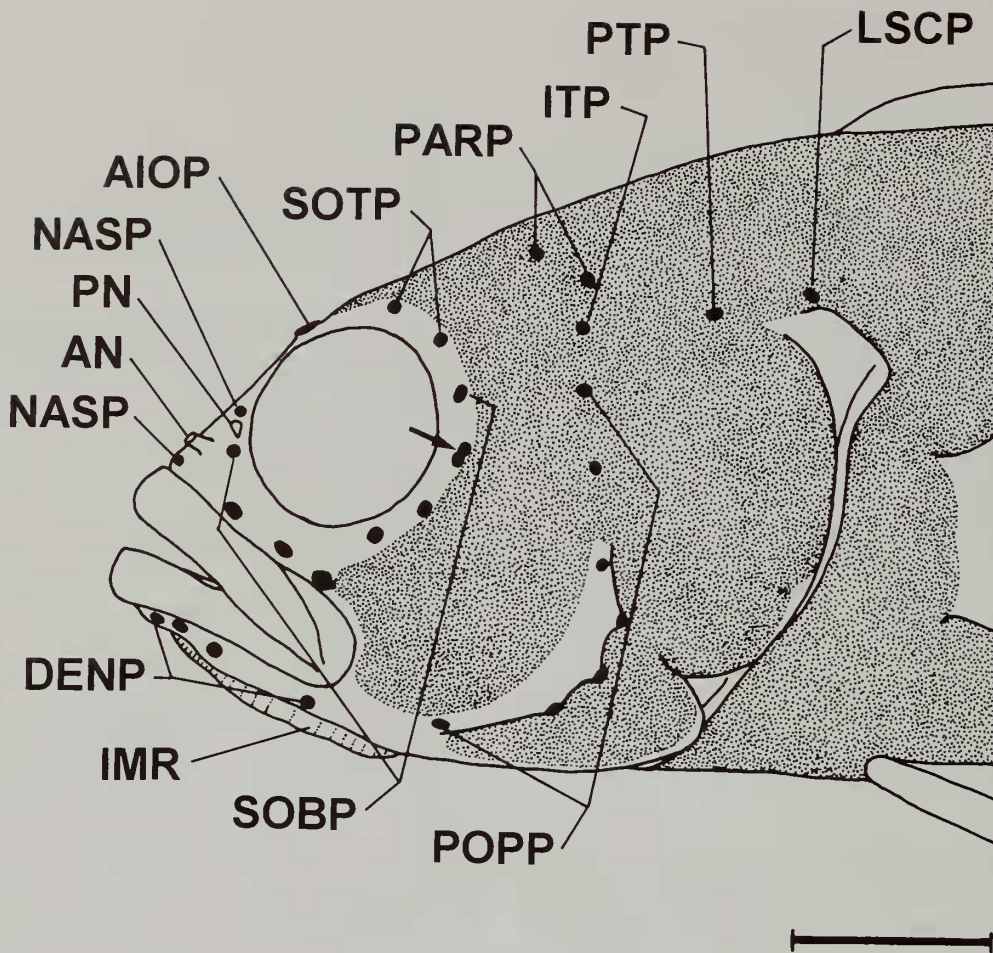
**PARATYPES.** AMS I.41004-001, 1: 21.3 mm SL (subsequently cleared and stained), collected with holotype; BMNH 1901.12.31.77, 1: 26.2 mm SL, Maldiv Islands, Haddummati Atoll (= Haddumati), 72 m, J.S. Gardiner; BPBM 32871, 2: 16.7–26.5 mm SL, Maldiv Islands, Ari Atoll, E side of reef N of Bathala Island, rubble bottom, 35 m, J.E. Randall and M.S. Adam, 6 March 1988.

#### DIAGNOSIS

*Pseudoplesiops occidentalis* is distinguished from all other pseudoplesiopines in having the following combination of characters: dorsal-fin rays II,23; scales in lateral series 26–28; and scales with distinct centres and radii in all fields.



Fig. 3 *Pseudoplesiops occidentalis*, BPBM 32926, 24.9 mm SL, holotype, South Malé Atoll, Maldiv Islands. (Photo by P. Crabb.)



**Fig. 4** Cephalic sensory pores of *Pseudoplesiops occidentalis*, BPBM 32926, 24.9 mm SL, holotype, South Malé Atoll, Maldives Islands. Arrow indicates atypical doubled suborbital pore (present unilaterally only in holotype). IMR, intermandibular ridge. Other abbreviations and methods of presentation follow Fig. 2.

**DESCRIPTION.** (Based on five specimens, 16.7–26.5 mm SL) Dorsal-fin rays II, 23, last 6–7 (6) segmented rays branched; anal-fin rays II, 14, last 5–6 (5) segmented rays branched; pectoral-fin rays 15–16 (16/15), upper 2–4 (2/2) and lower 1–3 (1/2) rays simple; pelvic-fin rays I, 3, all segmented rays simple; principal caudal-fin rays 9 + 8, the uppermost 1–2 (1) and lowermost 1–2 (2) rays unbranched; upper procurent caudal-fin rays 3–4 (4); lower procurent caudal-fin rays 3–4 (4); total caudal-fin rays 23–25 (25); scales in lateral series 26–28 (27/27); predorsal scales 6–8 (8); transverse scales 11–12 (11/11); scales behind eye 2; scales to preopercular angle 3; circumpeduncular scales 16; ctenoid scales beginning at 7–9 (7/9) transverse scale rows behind branchial opening; gill rakers 2–4 + 8–11 = 10–15 (2 + 8); pseudobranch filaments 6–7 (7).

Head pores (all bilaterally paired; Fig. 4): nasal pores 2; anterior interorbital pores 1; posterior interorbital pores 0; supraotic pores 2; suborbital pores 8–9 (9/8); posterior otic pores 0; preopercular pores 7; dentary pores 4; intertemporal pores 1; anterior temporal pores 0; posttemporal pores 1; parietal pores 2.

As percentage of standard length: body depth at dorsal-fin origin 24.0–28.2 (26.5); greatest body depth 24.0–32.4 (27.7); body width 13.3–14.5 (13.3); head length 30.5–33.5 (30.5); snout length 5.0–6.4 (5.6); orbit diameter 8.4–10.2 (8.4); interorbital width 3.6–4.8 (3.6); upper jaw length 11.3–12.0 (11.6); depth of caudal peduncle

16.5–16.9 (16.5); caudal peduncle length 7.2–8.5 (7.2); predorsal length 29.0–32.9 (31.3); preanal length 55.0–61.1 (60.2); prepelvic length 30.1–32.5 (30.1); length of first segmented dorsal-fin ray 10.4–11.7 (10.4); length of third from last segmented dorsal-fin ray 17.7–19.7 (17.7); dorsal-fin base length 61.7–71.4 (62.7); length of first segmented anal-fin ray 12.2–14.5 (12.9); length of third from last anal-fin ray 17.8–18.7 (18.5); anal-fin base length 32.8–35.9 (33.7); caudal fin length 25.3–27.9 (25.3); pectoral fin length 22.5–24.0 (23.3); pelvic fin length 27.7–35.3 (27.7).

Lower lip complete; prominent intermandibular flap absent, although low ridge present in some specimens (Fig. 4); fin spines weak and flexible; anterior dorsal-fin pterygiophore formula S/S/3/1 + 1; 15–16 (15) consecutive dorsal-fin pterygiophores inserting in 1:1 relationship directly behind neural spine 4; anterior anal-fin pterygiophore formula 2/1 + 1; 7–8 (8) consecutive anal-fin pterygiophores inserting in 1:1 relationship directly behind haemal spine 2; second segmented pelvic-fin ray longest; caudal fin weakly rounded to rounded or slightly emarginate; scales with distinct centres and radii in all fields; dorsal and anal fins without distinct scale sheaths, although with basal row of body scales overlapping fin base, particularly on posterior part of fins; anterior lateral line represented by single tubed scale at branchial opening, followed by intermittent series of centrally pitted scales, which terminate at vertical through base of segmented dorsal-fin ray 17–22 (?/22);



second intermittent series of centrally pitted scales originating on midside above anterior part of anal fin, extending on to middle part of caudal-fin base; additional centrally pitted scales present above and below pitted scale(s) on middle part of caudal-fin base, sometimes extending on to posterior part of caudal peduncle; scales present on cheeks (extending posteriorly over upper part of preopercle) and operculum (Fig. 4); predorsal scales extending anteriorly to point between anterior interorbital pores and vertical through anterior supraotic pores (Fig. 4); vertebrae 10 + 17; epurals 2; epineurals present on vertebrae 1 through 16–18 (1 through 16); ribs present on vertebrae 3 through 10, rib on ultimate precaudal vertebra relatively long.

Upper jaw with 2–5 pairs of curved, enlarged caniniform teeth anteriorly, the medial pair smallest, and 3–4 (at symphysis) to 1–2 (on sides of jaw) irregular inner rows of small conical teeth, the teeth of outer row of conical teeth largest; lower jaw with 2–3 pairs of curved, enlarged caniniform teeth, the medial pair smallest, and 2–3 (at symphysis) to 1 (on sides of jaw) irregular inner rows of small conical teeth, the conical teeth gradually increasing in size and becoming more curved on middle part of jaw, then becoming abruptly smaller on posterior part of jaw; vomer with 1 row of small, stout conical teeth arranged in a chevron; palatines edentate or with small irregular patch of small conical teeth; tongue pointed, edentate.

**LIVE COLORATION.** (Based on colour photograph of the holotype, photograph in Kuitert, 1998, and field notes taken from paratypes in BPBM 32871 when freshly dead)

Head and body bright pinkish red to orange-red, becoming pink ventrally and olive-red to orangish brown posteriorly; margin of orbit orange posteriorly, becoming pale blue ventrally; posttemporal, intertemporal, upper preopercular and upper suborbital pores indistinctly edged with grey; iris bright orange-red; pectoral-fin base pale pink to pinkish red; dorsal and anal fins bright orange-red basally, reddish hyaline distally, with pale blue distal margin; caudal fin greyish yellow to pale greyish red basally, remainder of fin reddish to yellowish hyaline with pale blue distal margin; pectoral fin pinkish to yellowish hyaline; pelvic fin pale pink basally, becoming pale blue distally.

#### PRESERVED COLORATION

Head and body brown, paler ventrally; grey edging on posttemporal, intertemporal, upper preopercular and upper suborbital pores remains, becoming greyish brown; dorsal and anal fins brownish hyaline, becoming greyish brown distally; other fins pale brown to dusky hyaline.

#### HABITAT AND DISTRIBUTION

*Pseudoplesiops occidentalis* is known only from the Maldiv Islands. It has been collected from and observed on reefs in 20 to 72 m.

#### COMPARISONS WITH OTHER SPECIES

*Pseudoplesiops occidentalis* forms a monophyletic group with *P. typus* Bleeker, *P. rosae* Schultz and several undescribed species. With the exception of *P. occidentalis*, this clade is confined to the eastern Indian Ocean and the West Pacific. It is diagnosed by scales with distinct centres and radii in all fields. Species limits within the clade are poorly resolved and are currently under study by us. For the purposes of comparison with *P. occidentalis*, we divide the clade into three subgroups, each of which we believe to be monophyletic: *P. occidentalis*, *P. rosae*-complex (autapomorphy: plate-like, median expansion of median ethmoid, pterosphenoid and basisphenoid into orbital space); and *P. typus*-complex (autapomorphy: all scales cycloid in adult specimens). Aside from the various autapomorphies listed above, the three taxa are distin-

guished from each other by the following: number of vertebrae (10 + 17 in *P. occidentalis*, 11–12 + 16–18 = 27–29, usually 11 + 17–18 in the *P. rosae*-complex and 11 + 17–18 in the *P. typus*-complex); number of dorsal-fin rays (II, 23 in *P. occidentalis*, I, 22–24 in the *P. rosae*-complex and II, 24–25 in the *P. typus*-complex); number of anal-fin rays (II, 14 in *P. occidentalis*, I–II, 12–14, usually I, 13–14 in the *P. rosae*-complex and II–III, 14–16, usually II, 15 in the *P. typus*-complex), number of scales in lateral series (26–28 in *P. occidentalis*, 26–29 in the *P. rosae*-complex and 32–40 in the *P. typus*-complex); number of circumpeduncular scales (16 in *P. occidentalis*, 16 in the *P. rosae*-complex and 20–22 in the *P. typus*-complex); predorsal scalation (6–8 scales, extending anteriorly to a point between the anterior interorbital pores and the vertical through the anterior supraotic pores in *P. occidentalis*, 5–10 scales, extending anteriorly to a point between the anterior interorbital pores and the vertical through the anterior supraotic pores in the *P. rosae*-complex, and 10–16 scales, extending anteriorly to the supratemporal commissure in the *P. typus*-complex); and cheek scalation (broadly overlapping the upper part of the preopercle in *P. occidentalis* and the *P. rosae*-complex, versus not overlapping the upper part of the preopercle in the *P. typus*-complex). Members of the *P. typus*-complex also attain a much larger body size than members of the other clades (largest examined specimen 53.0 mm SL versus 26.5 mm SL in *P. occidentalis* and 26.9 mm SL in the *P. rosae*-complex).

Of the characters noted above that are shared by *P. occidentalis* and the *P. rosae*-complex, three are unique within *Pseudoplesiops* and suggest a sister-relationship between the two taxa: low number of scales in lateral series; predorsal scales extending anteriorly beyond the supratemporal commissure; and cheek scales broadly overlapping upper part of preopercle. This relationship will be tested in a study of the phylogeny of the Pseudochromidae currently in progress by the first author.

#### REMARKS

Colour photographs of the species are provided by Randall & Anderson (1993) and Kuitert (1998). Randall & Anderson indicate that their photograph is of a 26 mm SL specimen in BPBM 32871, but it is actually of the holotype (BPBM 32926).

Regan's (1902) specimen of the species (BMNH 1901.12.31.77) was initially identified and reported on as "*Clinus* sp." A label on the jar and catalogue entry indicates that it was subsequently redetermined as the plesiopid *Belonepterygion fasciolatum* Ogilby (apparently by M.L. Penrith). Although we were unable to locate any references to this identification, they possibly exist.

#### ETYMOLOGY

The specific epithet is from the Latin, meaning of the west; *P. occidentalis* is known only from the western-most part of the range of the genus.

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